AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

Claim 1 (Currently Amended): An information reproducing method using a dot pattern, comprising ~~the steps of~~:

scanning a medium as image data by a scanner ~~scanning means~~ such as a printed material on which is formed a dot pattern portion, which formed by arranging in accordance with a given rule dots generated by a dot code generating algorithm, in order to recognize various kinds of multimedia information;

converting the image data of the dot pattern portion into code data; and

reading multimedia information corresponding to the code data out of a storage unit ~~storing means~~ to reproduce the multimedia information,

wherein the dot pattern forms a lattice block by a horizontal line composed of successive equally spaced dots and a vertical line extending vertically from the horizontal line, the lattice block has a lattice area surrounded by lattice points, and an information dot that defines data is generated by the algorithm and arranged within the lattice area

~~wherein said conversion comprises:~~

~~extracting a line composed by successive equally spaced dots, assuming one extracted line as a horizontal line, extracting a vertical line which extends vertically from the horizontal line, recognizing a vertical direction from the vertical line by a prescribed method, and extracting an information area~~.

Claim 2 (Original): The information reproducing method using a dot pattern according to claim 1, wherein the medium is a printed material or a picture and the dot pattern portion is formed so as to recognize voice information corresponding to image of the medium.

Claim 3 (Original): The information reproducing method using a dot pattern according to claim 1 or 2, wherein the dot pattern portion includes a plurality of areas which are separately printed depending on image of the printed material.

Claim 4 (Previously Presented): The information reproducing method using a dot pattern according to claim 1 or 2, wherein the dot pattern portion is formed on a seal member which can be attached to the printed material or a card.

Claim 5 (Currently Amended): An information reproducing device using a dot pattern comprising:

~~scanning means~~ a scanner for scanning image data of a dot pattern portion formed on a medium such as a printed material, the dot pattern portion being formed by arranging in accordance with a given rule dots generated by a dot code generating algorithm, in order to recognize various kinds of multimedia information, the information reproducing device;

~~extracting means~~ an extractor for extracting a line composed by successive equally spaced dots, assuming one extracted line as a horizontal line, extracting a vertical line which extends

vertically from the horizontal line, recognizing a vertical direction from the vertical line by a prescribed method, and extracting an information area;

~~storing means~~ a storage unit for, after the image data is digitalized into numeric values, storing multimedia information corresponding to the dot pattern portion based on the numeric values; and

an outputting unit; ~~means~~ for reproducing the multimedia information of the storage unit ~~storing means~~

wherein the dot pattern forms a lattice block by a horizontal line composed of successive equally spaced dots and a vertical line extending vertically from the horizontal line, the lattice block has a lattice area surrounded by lattice points, and an information dot that defines data is generated by the algorithm and arranged within the lattice area.

Claims 6-11 (Canceled)

Claim 12 (Currently Amended): An information reproducing device using a dot pattern comprising:

a scanner ~~scanning means~~ housed in a pen type case to capture image data of a dot pattern portion that is formed on a medium surface by arranging in accordance with a given rule dots generated by a dot code generating algorithm in order to recognize various kinds of multimedia information;

an extractor ~~extracting means~~ for extracting a line composed by successive equally spaced dots, assuming one extracted line as a horizontal line, extracting a vertical line which extends vertically from the horizontal line, recognizing a vertical direction from the vertical line by a prescribed method, and extracting an information area;

a storage unit ~~storing means~~ for, after the image data is digitalized into numeric value, storing multimedia information such as a voice corresponding to a code or x and y coordinates of the numeric values, or a code which is defined in advance based on the x and y coordinates; and

an outputting unit ~~means~~ for outputting the multimedia information stored in the storage unit; ~~storing means~~

wherein the dot pattern forms a lattice block by a horizontal line composed of successive equally spaced dots and a vertical line extending vertically from the horizontal line, the lattice block has a lattice area surrounded by lattice points, and an information dot that defines data is generated by the algorithm and arranged within the lattice area.

Claim 13 (Previously Presented): An information inputting/outputting method by camera inputting comprising the steps of:

printing on one surface of a printed material a dot pattern portion formed by arranging in accordance with a given rule dots generated by a dot code generating algorithm in order to recognize various kinds of multimedia information and an information transfer portion which includes a text, an illustration or the like to be recognized as information content;

wherein said dot pattern portion includes three different kinds of dots including, key dots, lattice dots and information dots;

capturing by a camera unit only image data of the dot pattern portion in the printed material and digitalizing the image data into numeric values; and

based on the numeric values, outputting information and a program corresponding to the dot pattern portion from a storing portion and executing the information and the program.

Claim 14 (Original): The information inputting/outputting method by camera inputting according to claim 13, wherein the dot pattern portion and the information transfer portion of the text, the illustration or the like are printed on the one surface to be superimposed.

Claim 15 (Original): The information inputting/outputting method by camera inputting according to claim 13 or 14, wherein the dot pattern portion comprises x and y coordinate information and the x and y coordinate information is associated with description of the information transfer portion.

Claim 16 (Original): The information inputting/outputting method by camera inputting according to claim 13 or 14, wherein the dot pattern portion comprises code number information and the code number information is associated with content of the information transfer portion.

Claim 17 (Original): The information inputting/outputting method by camera inputting according to claim 15, wherein the dot pattern portion of the x and y coordinate information and the dot pattern information of the code number information are printed on a flat surface of the printed material.

Claim 18 (Previously Presented): The information inputting/outputting method by camera inputting according to claim 13 or 14, wherein in the step of capturing image data of the dot pattern portion by a camera unit, the dot pattern portion, which is printed with an ink that absorbs infrared light, is radiated with the infrared light.

Claim 19 (Original): The information inputting/outputting method by camera inputting according to claim 18, wherein the dot pattern portion is printed with a carbon ink.

Claim 20 (Original): The information inputting/outputting method by camera inputting according to claim 18, wherein the dot pattern portion is printed with a transparent ink.

Claim 21 (Previously Presented): The information inputting/outputting method according to claim 13 or 14, wherein in the step of capturing image data of the dot pattern portion, the dot pattern portion is radiated with ultraviolet light.

Claim 22 (Previously Presented): A portable information inputting/outputting device using a camera inputting method, comprising:

a camera unit for scanning only image data of a dot pattern portion printed on the printed material, the dot pattern portion formed by arranging in accordance with a given rule dots generated by a dot code generating algorithm in order to recognize various kinds of information and an information transfer portion which includes a text, an illustration or the like to be recognized as information content being printed on one surface of the printed material;

wherein said dot pattern portion includes three different kinds of dots including, key dots, lattice dots and information dots;

an image processing portion for digitalizing the image data into numeric values;

processing means for reading information of a storing portion corresponding to the dot pattern portion based on the numeric values obtained by the image processing portion; and

outputting means for outputting the information read out by the processing means.

Claim 23 (Original): The portable information inputting/outputting device according to claim 22, further comprising an infrared light emitting portion for radiating the dot pattern portion in the printed material with infrared light.

Claim 24 (Original): The information portable inputting/outputting device according to claim 22, further comprising an ultraviolet light emitting portion for radiating the dot pattern portion in the printed material with ultraviolet light.

Claim 25 (Original): The portable information inputting/outputting device according to claim 22, wherein the camera unit is a C-MOS camera.

Claim 26 (Original): The portable information inputting/outputting device according to claim 22, wherein the camera unit is a CCD camera.

Claim 27 (Original): The portable information inputting/outputting device according to claim 22, wherein the camera unit is configured separated from the image processing portion, the storing portion, the processing means and the outputting means to carry out transmission via an interface portion.

Claim 28 (Original): The portable information inputting/outputting device according to claim 22, wherein the camera unit and the image processing portion is configured separated from the storing portion, the processing means and the outputting means to carry out transmission via an interface portion.

Claim 29 (Original): The portable information inputting/outputting device according to claim 22, further comprising a microphone as an inputting portion.

Claim 30 (Original): The portable information inputting/outputting device according to claim 22, wherein data of the numeric values of the dot pattern portion input by the camera unit is transmitted to a computer such as a server via a communication card.

Claim 31 (Original): The portable information inputting/outputting device according to claim 22, wherein data of the numeric values of the dot pattern portion input by the camera unit is transmitted to a computer such as a server via a communication card, and information and a program corresponding to the data is received.

Claim 32 (Original): The portable information inputting/outputting device according to claim 22, further comprising a GPS (global positioning system) unit for inputting position information.

Claim 33 (Original): The portable information inputting/outputting device according to claim 22, wherein the portable information inputting/outputting device is a portable phone.

Claim 34 (Previously Presented): The portable information inputting/outputting device according to claim 22, wherein the camera unit is part of a portable phone.

Claim 35 – 46 (Canceled)

Claim 47 (Currently Amended): An electronic information device comprising:

a scanner ~~scanning means~~ for scanning a medium surface on which dots are arranged in accordance with a given rule by a dot code generating algorithm in order to recognize various kinds of multimedia information;

an extractor ~~extracting means~~ for extracting a line composed by successive equally spaced dots, assuming one extracted line as a horizontal line, extracting a vertical line which extends vertically from the horizontal line, recognizing a vertical direction from the vertical line by a prescribed method, and extracting an information area;

a storage unit ~~storing means~~ for, after image data of the scanned medium is converted into numeric values, storing multimedia information corresponding to the numeric values; and

an outputting unit ~~means~~ for reading the multimedia information stored in the storage unit ~~storing means~~ to output the multimedia information, the scanner ~~scanning means~~, the storage unit ~~storing means~~ and the outputting unit ~~means~~ being housed in a pen type case;

wherein the dot pattern forms a lattice block by a horizontal line composed of successive equally spaced dots and a vertical line extending vertically from the horizontal line, the lattice block has a lattice area surrounded by lattice points, and an information dot that defines data is generated by the algorithm and arranged within the lattice area.

Claim 48 (Currently Amended): The electronic information device according to claim 47, further comprising an inputting unit ~~means~~ for inputting the multimedia information into the storage unit ~~storing means~~.

Claim 49 (Original): A tablet on which is formed a dot pattern portion formed by arranging in accordance with a given rule dots generated by a dot code generating algorithm in order to recognize various kinds of multimedia information.

Claim 50 (Original): A computer executable program for registering a paper icon which has a dot pattern portion formed on a medium and code information associated with the paper icon by using a scanner connected to an information processing device, the program comprising the steps of:

designating a display icon displayed on a display screen;

setting allocation of the paper icon to a ON state by selection on the display screen;

instructing the scanner about scanning processing of the paper icon on the display screen or by a voice data output while the ON state is kept;

after the scanning processing is performed based on the step of instructing, extracting code information from image data obtained by the scanning processing; and

associating the code information with the display icon designated in the step of designating.

Claim 51 (Original): The computer executable program according to claim 50, further comprising the steps of:

deleting from the display screen the display icon corresponding to the paper icon registered; and executing a function of the display icon associated with the code information when the paper icon is scanned by the scanner.

Claim 52 (New): The information reproducing method according to claims 1, 5, 12 or 47 wherein the scanner extracts the horizontal line and the vertical line and scans the dot defined in the lattice area.